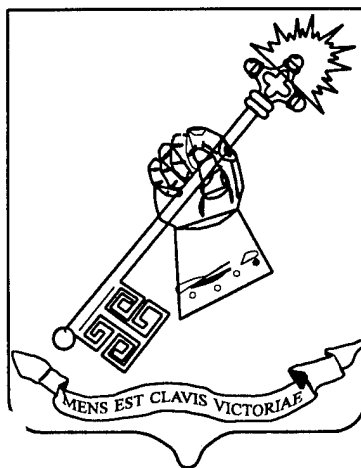


SHOULD THE COMBAT ARMS BATTALION COMMANDER OWN HIS ORGANIZATIONAL LOGISTICS SUPPORT?

A Monograph
By
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Ordnance



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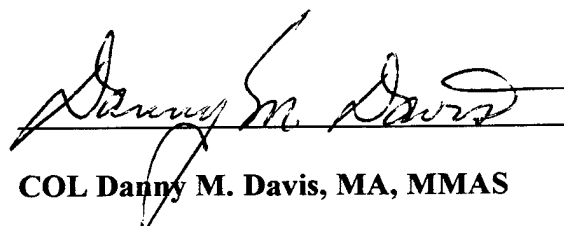
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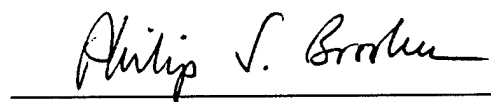
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ABSTRACT

SHOULD THE COMBAT ARMS BATTALION COMMANDER OWN HIS ORGANIZATIONAL LOGISTICS SUPPORT?

This monograph examines the new logistics concepts proposed by the U.S. Army Combined Arms Support Command (CASCOM) to support brigade size and smaller maneuver units. It focuses the analysis on the changes proposed for the support platoons of maneuver battalions. Historically, organizational logistics soldiers and equipment have been an inherent component of the heavy maneuver battalion. Based on guidance from the Chief of Staff of the Army, CASCOM has developed new organizations and doctrine to "unencumber" the maneuver battalion of its logistical responsibilities. At the maneuver battalion level, this has resulted in the creation of the proposed Combat Logistics Company (CLC) which combines the organizational logistics responsibilities of the support platoon with limited Direct Support (DS) logistics capabilities. The CLC is assigned to the Division Support Command (DISCOM), and the maneuver battalion is 100% reliant on the CLC for organizational logistics support.

First, the monograph reviews CASCOM's approach to designing these new concepts. It then discusses the results of these efforts, with emphasis on the CLC. Next, it reviews the initial evaluation efforts conducted by CASCOM and other Army organizations. The monograph then argues that the approach taken by the Army for evaluating these new concepts and organizations is primarily focused on ensuring that technical specifications are met and fails to address the evaluation in a holistic manner which would take into account subjective assessments of such things as unit morale, esprit, and leadership. It proposes that an assessment be conducted which includes an evaluation of the effects that the new concepts and organizations could potentially have on the combat power of maneuver battalions they support. The monograph then proposes the use of a modified version of then Colonel Huba Wass de Czege's Combat Power Model be used as an analytical model to develop the analysis methodology. Finally, it lays out a proposed structure for the modified Combat Power Model.

The monograph concludes that while good and necessary analysis has been conducted while evaluating the proposed logistics concepts, the Army must take the next step and perform a holistic analysis of these concepts and organizations that includes those elements that are often subjective in measurement, but are vitally important to "unencumbering" the maneuver battalion and allowing it to maximize its potential combat power on the battlefield of the 21st Century.

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I. Introduction

“We live in a dynamic world, an era of contradictory trends shaped by two great forces, one strategic, the other technical--the advent of the Information Age. The scale and pace of recent change have made traditional means of defining future military operations inadequate. Change will continue, requiring our Army to recognize it as the only real constant.”¹

In writing FM 525-5 the Army recognized the changes that technology brought, and will continue to bring, to warfare. Change has been with us since time began. However, since the decade of the 1970s, change has arguably proceeded at a faster pace than ever before in history. What this change means for the future of the U.S. Army is still being studied and formulated. FM 525-5 is an attempt to move from a conceptualization of the future, and define what reality will look like in the 21st Century.² In doing so, the Army leadership has recognized the enormous complexity inherent in this undertaking.³

The pace of change in warfare has created challenges for every element of the U.S. Army. This is especially true in the area of logistics. “[T]he pace of development is so great that it renders our current material management and acquisition system inadequate.”⁴ What has remained constant in this time of rapid change is the importance of logistics to the success of an army.

“Strategy, like politics, is said to be the art of the possible; but surely what is possible is determined not merely by numerical strengths, doctrine, intelligence, arms and tactics, but, in the first place, by the hardest facts of all: those concerning requirements, supplies available and expected, organization and administration, transportation and arteries of communication. Before a commander can even start thinking of maneuvering or giving battle, of marching this way and that, of penetrating, enveloping, encircling, of annihilating or wearing down, in short of putting into practice the whole rigmarole of strategy, he has - or ought - to make sure of his ability to supply his soldiers...”⁵

Martin Van Creveld's comments were directed towards senior policy makers and military leaders. However, these statements hold as much truth for the tactical commander as they do for these senior leaders. As U.S. Army doctrine states in FM 100-5, "Logistics cannot win a war, but its absence or inadequacy can cause defeat."⁶ Given the constant of change, and the continued importance of logistics to the Army's success, it is imperative that the logistical elements of the Army remain abreast of change. While few would disagree with this assertion, there is disagreement as to what to change, and how that change should be implemented.

Given the complex dynamics of change on the battlefield, the truly difficult question the combat service support (CSS) community must answer is this: How does the logistician determine what will be successful on the future battlefield without the empirical evidence of combat? Historically, the logistics community has taken a narrow approach to measuring success.⁷ This approach relies on a statistical analysis of theoretical and actual logistics capabilities compared to the needs of a supported unit.⁸ It has emphasized the desire to utilize technology and technologies impacts on unit organizations. There is no doubt that the elements of this approach are important. However, they are only a part of the necessary analytical approach to answering our question.

To fully answer the above question the Army must proceed to the next level of detail and address those often subjective elements that are difficult to quantify. In short, the Army needs to take a holistic approach to answering a most difficult and complex question. This paper proposes that the Army adopt this type of approach when determining the structure of future logistics organizations. The approach should include those elements of leadership and the interaction of persons on the battlefield. It must also

remember that, in combat, logistics is only important in light of the relationship it has to the combat power of the supported units.

II. CASCOM's Conceptual Design Approach

The Army's efforts to push itself into the 21st Century has impacted every element of the Army, not the least of which is in the logistics community. Generally, the combat and combat support arms drive the modernization efforts of the Army through the fielding of new technologies, organizations, and doctrine. Most technology and organization changes in the logistics arena are in response to the modernization of the combat and combat support arms. With our modernization has come increased complexity. Complexity is seen not only in advanced technology, but also in the tempo of operations and our joint and multinational approach to warfare. This complexity makes the job of every soldier, from private to general, more difficult. The impact of this situation is most keenly felt by those leaders required to synchronize and command the units in direct contact with the enemy. Reducing the complexity of the commander's job at all levels, platoon, company, and battalion, is a critical element of the Army's efforts to prepare for war in the 21st Century.

This increased complexity has, in large measure, driven the logistics community's approach to redesigning CSS doctrine and force structure to support the Army in the next century. "The thrust of our CSS/logistic redesign is taken from the CSA and CG, TRADOC challenge to develop CSS/logistic concepts which **unencumber the maneuver**."⁹ Webster's Dictionary defines encumber as "to burden or impede". It would follow that the definition of unencumber would be the antithesis of this definition - to

remove a burden or impediment. CASCOM's interpretation of the intent of this statement seems to have been , to the extent possible, to eliminate the maneuver commander's responsibility for directing and planning logistical activities and make them the responsibility of a logistics commander. In keeping with this definition, CASCOM followed three concepts which guided the conceptualization and development process of future logistics doctrine and force structure.

The first concept is that "core" logistics functions should be centralized or pushed back to the highest practical level while still ensuring battlefield success. The core functions that effect the maneuver battalion are medical, supply, and maintenance operations. As such, these core functions have been pushed back to the logistical battalion providing direct support to the maneuver brigade. By removing the organizational logistics support from the maneuver battalion, the size of the maneuver battalion and scope of responsibility for the battalion commander have been dramatically reduced - we have unencumbered maneuver. In theory, this reduction in scope and responsibility enables the maneuver battalion commander to "fight the fight" while the logisticians assume full responsibility for planning and providing CSS to the maneuver battalion.

CASCOM's second concept was that new technological advances would be used whenever possible to enable and enhance the force, which directly corresponds to a reduction of impediments to the maneuver commander's plans. Developers realized that many of their new ideas and requirements were not supportable without a large infusion of advanced technology. Another advantage to using new technologies is that technological improvements often allowed a reduction in force structure because of the greater capability of each system.

Three interrelated technologies were key to the force and doctrine developers. First, they understood that, to be effective, future logistical operations require improved digital data links.¹⁰ In order to manage and analyze the flow of supplies and effectively use the transportation, maintenance, and medical assets available, it is necessary to transmit and accumulate vast quantities of data from all over the battlefield. The pace of the modern battlefield requires that, to be of any use, this data transfer must happen quickly, within minutes or hours rather than days. This kind of speed requires that the data be transmitted over the airwaves. Current technology does not have the bandwidth or transmission speed to transmit the quantity or quality of data required and hence drove the need for new or improved technology. This technology was a prerequisite to developing the other two capabilities. Total asset visibility (TAV) is the second capability.¹¹ TAV is a system where any manager can access the quantities, location, and serviceability of all Department of Defense supply stocks around the world. It uses digital data transmission and storage technologies to maintain a centralized data base of all assets. It enables units to reduce their dependence on the stockpiles of material we now accumulate to provide a cushion against the unexpected by allowing centralized managers the theoretical capability of directing material resources to where they are needed in a more timely manner. The third capability is an enhanced command, control, and communications capability in CSS units.¹² The complexity and pace of the modern battlefield require that the CSS commander and his soldiers have an improved C3 system. This system must enable the CSS commander to manage their assets and command their units over greater distances while keeping pace with the maneuver units they support.

The third concept driving CSS force and doctrine development is that CSS units must be able to maintain the tempo and pace of the units they support so they do not encumber the maneuver unit.¹³ This concept refers to sustainment of the duration of operations, but also alludes to the fact that logistics units must move and communicate with the units they are supporting. This principle also refers to a need for flexibility identified in FM 525-5. "...[C]ombat service support must be modular, then capable of task-organizing for the mission."¹⁴

CASCOM's attempts to "unencumber the maneuver" have taken shape in numerous ways. New organizations have been created and others modified, doctrinal concepts have been modified to incorporate organizational change, and new technologies have been incorporated into organizations and concepts. However, since the length of this paper does not allow us the luxury of addressing all areas of change, it will focus on one aspect of change - the modification of logistical organizations at the maneuver battalion level and the creation of a new unit structure called the Combat Logistics Company or CLC.

III. The Results of CASCOM's Efforts

Combat Service Support (CSS) organizations in combat arms battalions have remained relatively constant since the Second World War. A portion of the maneuver battalion is organized to provide organizational level supply, maintenance, and medical support to the battalion. The combat arms battalion commander both commands and controls the logistical elements that provide organizational level support to his units. The maneuver battalion draws its next level of CSS support, the direct support level (DS),

from units outside the battalion. Normally, this DS support is provided by logistics units assigned to the division or corps logistical battalions.

In 1994, the U.S. Army Combined Arms Support Command (CASCOM), the Army's center for logistics doctrine development, proposed a significant change to the way organizational level support is designed to function in maneuver battalions. The proposal is that all CSS assets be taken out of the maneuver battalion. A new CSS unit structure was developed to replace the CSS force structure taken out of the maneuver battalions. The new unit structure is currently termed a Combat Logistics Company (CLC). In addition, CASCOM proposed the reconfiguration of the Forward Support Battalions (FSB) of the Division Support Command (DISCOM) into the Forward Logistics Battalions (FLB). The proposed FLB organization is very similar to the current FSB, with the addition of the CLCs that support the brigades maneuver battalions. The CLC is assigned to the Division Support Command (DISCOM) as a separate company of the FLB.

Under this proposed logistics restructuring concept the combat arms battalion commander does not command or control any of the CSS units that provide his organizational level support. In fact, the combat arms battalion has no CSS capability organic to the unit. As figures 1 and 2 indicate below, there are relatively minor differences between the equipment densities of the proposed CLC supporting a maneuver battalion and the current support platoons in the headquarters company of a maneuver battalion. While not depicted on the charts, the CLC is also equipped to provide an as yet undefined amount of direct support (DS) maintenance and supply to the maneuver battalion. However, the preponderance of DS capability will still remain with the FLB.

The significant differences between the two organizations are in their chains of command and in the concept of operations for providing organizational and DS logistical support to the maneuver battalion. In essence, the concept of modular, centralized logistics now encompasses the battalion level of military organization in the maneuver brigade.

Figure 1. Headquarters Company, Tank Battalion

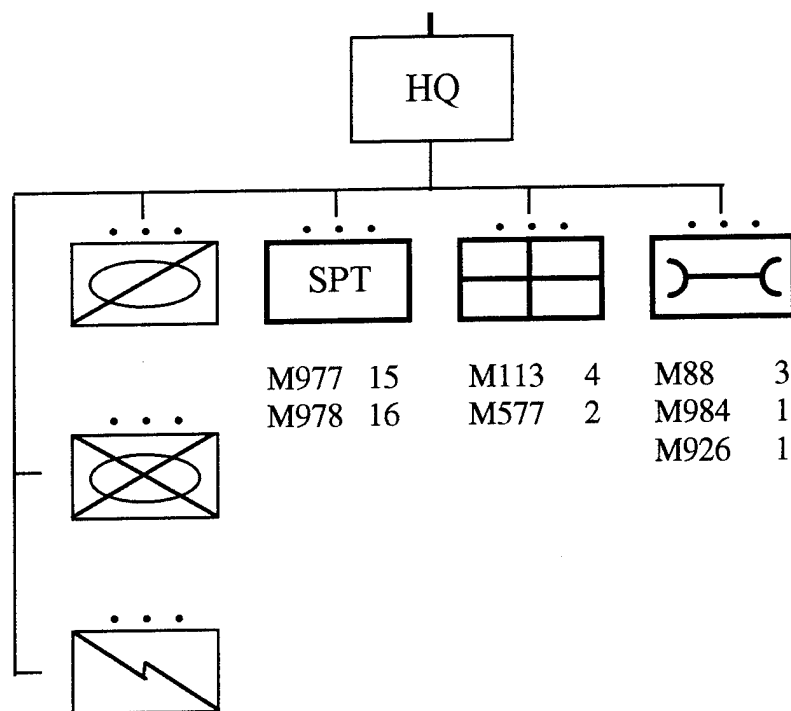
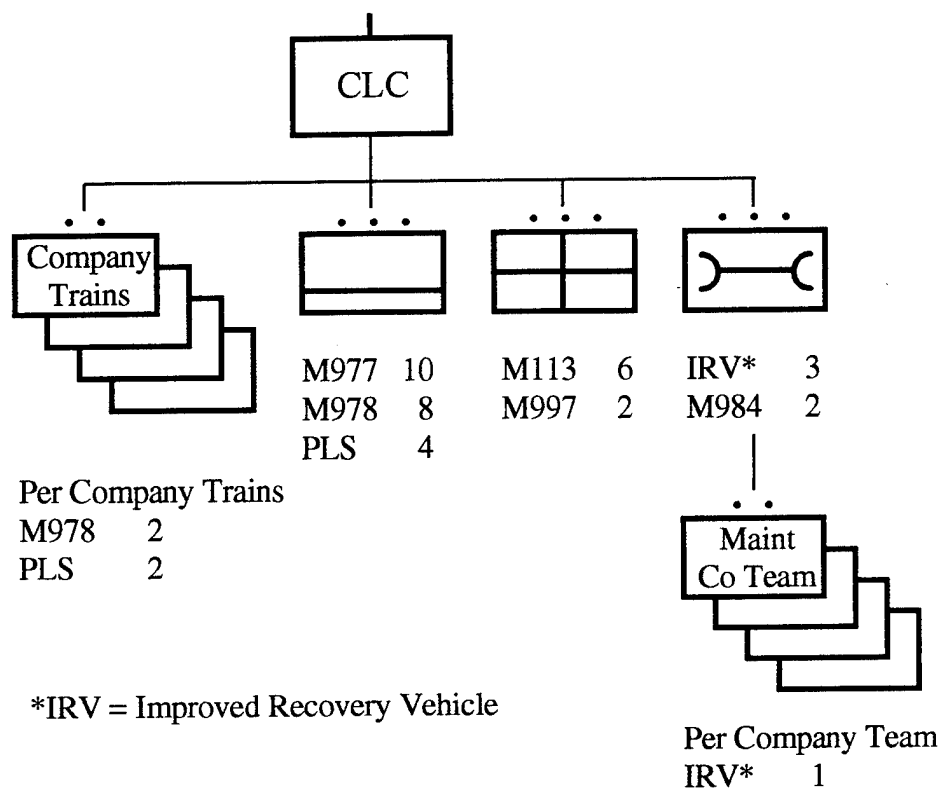


Figure 2. Combat Logistics Company supporting a Tank Battalion.



During operations, the relationship of the CLC to the combat arms battalion is intended to be similar to the current relationship between a Forward Support Battalion (FSB) and a maneuver brigade. There is a habitual support relationship between the CLC and the maneuver battalion it supports. When units are task organized, the CLC will continue to provide dedicated organizational and DS support to its cross-attached customers, a true modular support concept.

While the CLC has many similarities to the current support platoon of the maneuver battalion, it also proposes changes that could fundamentally alter the relationship between the supporting and supported units. These new organizations and concepts of logistical support have already begun the important next phase of the developmental cycle.

IV. Initial Design Evaluation

CASCOM used the Prairie Warrior '95 exercise to test and develop the new logistical concepts in general, and specifically the divisional logistics structure concepts. The design and development of the CLC concept was a direct result of these efforts. The initial work on designing a new division logistics structure took place between September 1994 and May 1995. During this time the Combat Service Support Battle Lab drafted and staffed proposals for organizations and capabilities to support the division level unit known as the Mobile Strike Force. While the combat and combat support brigades and battalions of the division truly represented a mélange of units pulled together to accomplish a specific mission, the logistics structure of the Mobile Strike Force was representative of the new concepts for CSS structure developed by CASCOM.

During February 1995, CASCOM presented their new CSS concepts and structures to the Command and General Staff College faculty and students who would simulate the logistical staff of the Mobile Strike Force during the 1995 Prairie Warrior exercise. From February through May of 1995, the CSS concepts and force structure went through numerous minor changes and adjustments. A series of computer simulations designed to train the Mobile Strike Force staff gave the students an opportunity to reflect on and discuss the new units and concepts. After each computer exercise the faculty and students met to discuss lessons learned, and developed a set of tactics, techniques, and procedures designed as a "how to fight" manual for the Division Support Command (DISCOM). However, because of their focus on corps and divisional level operations, neither these exercises nor Prairie Warrior 95', provide any useful training, testing, or information

related to the brigade and battalion levels of logistics support. Never the less, at the conclusion of the Prairie Warrior 95' exercise, the TRADOC Analysis Center at Fort Lee concluded that the CLCs were capable of meeting the logistical requirements of the combat units they were supporting.¹⁵ This assessment was made through the comparison of consumption data generated by Combat Service Support Tactical Simulation System/Corps Battle Simulation systems (CSSTSS/CBS) and the Operational Logistics Planner (OPLOGPLN) software with the known capabilities of the CLC's equipment and personnel. The inability of the computer simulation to model the moral or human dimension of warfare and its limited capability to accurately model organizational level logistics further restricts the significance of this assessment to a purely statistical analysis of requirements versus capabilities. Concurrent testing was done by the Training and Doctrine Command (TRADOC) Analysis Center (TRAC) at Fort Lee, Virginia using computer generated combat models and the Operations Logistics Planning Model (OPLOGPLN). Both of these models predict quantities of supplies consumed by the modeled combat unit using a sample scenario. As such, the data from these simulations was used to compare theoretical requirements generated by combat units with the accepted capacity figures of the support unit, in this case the CLC. TRAC concluded from these studies that the emerging results appeared to demonstrate that the future logistical organizations and concepts could support Force XXI requirements with relatively minor modifications.¹⁶

Concurrent with their design efforts and the simulation testing CASCOM submitted their proposals to the Army Battle Labs and Combat Development Directorates of the Army Branch Schools.¹⁷ The responses to date have been mixed. Major General Guddy,

the U.S. Army Medical Department and School Commandant, did not support CASCOM's initiative.¹⁸ He stated that removing the medical soldiers from maneuver battalions would reduce the quality of medical care that soldiers receive.¹⁹ In an 18 July 1995 reply to the Major General Guddy's letter, the CASCOM Commander, Major General Robison, stated that while it is true that the medical assets of the maneuver battalion would be consolidated at the CLC, the concerns that Major General Guddy raised were unfounded.²⁰ He states that the intent is not to remove the battalion medical assets from the forward areas, but rather to change the command relationships between the logistics units and the maneuver battalion. The belief is that this consolidation of resources will result in cost and resource savings while having little impact on the quality of service provided to the maneuver battalion. The U.S. Army Armor Center and School responded to CASCOM's initial concept proposal for the restructuring of brigade logistics during the summer of 1995. In their response the school identified potential gains and improvements, but raised several issues regarding the relationships between the CSS and combat units and the internal organization and structure of the maneuver battalions and CLC.²¹

To date, the Army's development and analysis efforts have concentrated on addressing the issues of capability and quantity of support. These issues are vitally important, however, by themselves, they only address a part of the analytical structure necessary to ensure that we have met the Chief of Staff of the Army's guidance to "unencumber" the maneuver units. The questions and concerns raised by the Armor and Medical Centers and Schools are indicative of the holistic analysis the Army must perform. They begin to address those subjective areas of morale, esprit, leadership, and team

building, among others, that are difficult to measure or grasp, but are vital to battlefield success. The Army needs to find a comprehensive analytical model that addresses the full range of issues related to success in combat, and use that model to perform an in-depth analysis of the new organizations and doctrinal concepts that CASCOM has developed.

V. Another Approach to Evaluation

Determining the relative efficiency, capability, or effectiveness of a military unit requires a holistic analysis. To be reasonably accurate, the assessment must take into account a wide variety of factors. These should include the effects the organization has on supported and supporting units. The impacts that the enemy's forces can exert on the units being studied are also critical to understanding a units strengths and weaknesses. While leadership and command relationships are difficult to analyze, they are nonetheless critical to ensuring that an assessment is valid.

The Combat Power Model developed by Colonel Wass de Czege provides an excellent framework for performing this analysis. Although this model is focused towards evaluating and understanding combat and combat support units, the basic outline can be adapted to analyze the theoretical potential of any military unit. This paper presents the Combat Power Model as a tool for evaluating and comparing the current concept of CSS support for the maneuver battalion with the concept proposed by CASCOM. The focus of this paper is a comparative analysis of the impact that the CLC exerts on the potential combat power of the maneuver battalion. As with any CSS unit, the true measure of success is the units ability to maintain, and possibly increase, the combat power of the

supported unit. The end result on the combat power of the maneuver battalion takes precedence over any other consideration presented.

The foundation of the Combat Power Model rests on several key premises. The first relates to the nature of the modern battlefield. Karl von Clausewitz wrote in the early 1800s that “friction” was an integral part of every military battle or operation.²² Colonel Wass de Czege asserts that friction is as prevalent today as it was in Clausewitz’s time. “This has never been more accurate than today when the potential destruction of nuclear-chemical weapons is superimposed on an already complex and lethal conventional battle.”²³ The second premise is that the battlefield is a dynamic, complex environment that defies any simple analysis or conclusions. “This complex environment requires that US Army officers understand more than a few simple decision rules... We must also understand the dynamics which underlie their application.”²⁴ The last foundation of the Combat Power Model is the premise that the outcome of any battle depends on the relative combat power generated by two opponents at the actual moment of combat.²⁵ The key term to understand here is relative. While one may easily understand the point that there is a combined effect between the combatants combat power, there is a more subtle inference in the use of this word. This is the synergistic effects created between all of the elements that combine to generate combat power.

Colonel Wass de Czege proposed that combat power is a function of the effects of four elements; maneuver, firepower, protection, and leadership. Each of these effects is also the function of several factors. Firepower effects are a function of the volume and accuracy of fires, lethality of munitions, target acquisition, and flexibility of employment. Maneuver effects are a function of unit mobility, tactical analysis, management of

resources, and command, control, and communications. Protection effects are a function of concealment, exposure limitation, and damage limitation. Leadership effects are a function of technical proficiency, an understanding of unit capabilities, analytical skills, communication skills, dedication, commitment, moral force, and an understanding of the battlefield effects. Each of these factors is in turn a function of several other factors.

“Combat power is always relative, never an absolute, and has meaning only as it compares to that of the enemy. Combat power is defined as that property of combat action which influences the outcome of the battle. It has meaning only in a relative sense--relative to that of the enemy--and has meaning only at the time and place where battle outcomes are determined. Prior to battle there exists only capability. Leaders and the forces of their environment, to include the actions of the enemy, transform this capability into combat power. Superior combat power has been generated on the battlefield by superior leaders and superior units against forces vastly superior by any objective criteria. The appropriate combination of maneuver, firepower, and projection by a skillful leader within a sound operational plan will turn combat potential into actual combat power. Superior combat power applied at the decisive place and time decides the battle.”²⁶

The key to understanding and using this model is the realization that Colonel Wass de Czege's four effects are synergistic, and are only valid when looked at together as an complex, interrelated whole.

The Combat Power Model must retain its basic holistic analytical approach when it is applied to logistics units. However, changes are necessary because we are analyzing a support and supported relationship as well as the potential of combat and combat service support units. Because we are comparing two support concepts, the analysis must address the differences that set these logistics units apart. It must also address such issues as morale, esprit, and teamwork. However, the most important element of this analysis must always be the impact that these two organizations have on the combat power of the unit

they support. Every issue must be related back to its eventual impact on the ability of the maneuver battalion to generate combat power and defeat the enemy.

VI. The Evaluation Model

1. Impacts on Firepower Effect

Firepower is the first effect analyzed in the Combat Power Model. Firepower effect is defined as being a function of five factors; the volume of fire, lethality of munitions, accuracy of fires, target acquisition, and the flexibility of employment. It is important to emphasize that the critical component to be measured here is the firepower of the maneuver battalion. Although an element may effect the logistics unit in some way, unless the resulting effect can somehow be demonstrated to effect the firepower of the maneuver battalion, it does not meet the so what test of this analysis. Three of the five factors above offer no utility to an analysis of logistical impacts on the maneuver battalion. The lethality of the munitions used, while ostensibly a logistics function, cannot be influenced by the CLC or the ammunition section of the support platoon. The accuracy of the maneuver battalion's fires and its ability to acquire targets are both solely a function of the actions of the combat arms soldiers and the combat equipment assigned to the maneuver battalion. The two factors which bear the need for further analysis are volume of fires and flexibility of employment. Since the maneuver battalion's first level of ammunition resupply is in the support platoon or CLC, their ability to maintain the flow of ammunition to the battalion will directly impact its volume of fire. Likewise, the ability to flexibly employ the

maneuver battalion is in part dependent on the flexibility inherent in the logistical structure that supports it.

A. Impacts on Volume of Fire

The Combat Power Model proposes that a unit's potential volume of fire is a function of the number of delivery means available, the rate of fire of the weapon systems used, and the supply capability of the logistics units in support. Since a weapon system's rate of fire is not affected by the organizational logistics units, this characteristic will not be addressed. The other two characteristics are a critical component of the evaluation. The number of delivery means available is directly impacted by the ability of the organizational maintenance structure to return damaged equipment to the battle. Likewise, the number of rounds of ammunition available to the maneuver battalion directly impacts how many rounds it can fire.

The impact of the CLC must be evaluated in two distinct areas. The first is in the effects on the long term readiness of the maneuver battalions equipment. The second is the ability to return battle damaged equipment to service. Repair, maintenance management, organizational maintenance services, the Preventive Maintenance Checks and Services (PMCS) program, and organizational level repair parts ordering, receipt, and issue are all supported or performed by the organizational maintenance team. The maneuver battalion commander and his staff will no longer have the same level of authority or influence over organizational maintenance operations under the CLC concept. This loss is offset against the potential personnel, equipment, and repair parts savings gained through consolidation of maintenance and repair parts efforts. This consolidation of assets is projected to provide the CLC commander with greater flexibility, allowing him

to influence the maintenance situation of the maneuver battalion through a redistribution of consolidated maintenance assets. The questions that must be answered are threefold. First, how will the reduction in the control and influence of the battalion commander effect the readiness rates of the maneuver battalion, and ultimately the firepower effects of the unit. Second, how will the consolidation of assets and the added flexibility afforded to the CLC commander effect the readiness rates of the maneuver battalion and the repair capability of the maintenance units. Last, will the consolidation of maintenance and repair parts assets result in the predicted cost savings, and in the final result, increase the readiness of combat systems in the maneuver battalion.

The second characteristic impacting on the volume of fire generated by the maneuver battalion is the ammunition supply capability of the CLC. In the model this effect is measured as the potential of logistics units to supply the requisite quantity and types of ammunition to allow the maneuver battalion to achieve its firepower potential. Arguably, this characteristic has been analyzed in greater detail than any other during the CLC development process. The objective nature and readily available sources on this subject are the primary reasons for this phenomena. To begin with, the ammunition consumption factors for current maneuver battalion structures are known. Software such as the Operational Logistics Planner and historical examples provide reasonably accurate planning factors with which to begin an assessment. Operational experience also provides a relatively accurate data set from which one can evaluate the ability of logistics personnel and individual items of equipment to receive, store, and issue munitions. Since the maneuver battalion support platoon and the CLC are so similar in personnel and equipment structure, it is simple mathematics to calculate the potential ammunition supply

capabilities of either unit. This is essentially the method used by the TRADOC Analysis Center at Fort Lee when they concluded that the CLC possessed the capability to handle the ammunition resupply requirements of the maneuver battalion it was supporting. The question that still must be answered concerning the ammunition resupply capability of the CLC, is the impact that the changes in command structure will have on the coordination and flexibility of employment of these assets on the battlefield. The close coordination of numerous key personnel, to include the S4, Support Platoon Leader, First Sergeants, Supply Sergeants, and others, are required to ensure the smooth functioning of the ammunition resupply system.

B. Impacts on Flexibility of Employment

The Combat Power Model defines flexibility of employment as a function of five factors; weapons ranges, mobility, signature effects, fire control systems, and tactical employment doctrine. The flexibility of employment of the maneuver battalion is effected by the flexibility of employment of the units that support it. Three of these factors are applicable to our analysis. While weapons ranges and fire control systems are the inherent properties of combat units, the mobility, signature effects, and tactical employment doctrine of the logistics units impact on the like factors of their combat brethren. As such, these factors must be analyzed as part of our study.

The mobility of CSS units directly affects the mobility of the maneuver battalion they support. To retain its mobility, the CSS unit must be capable of traveling with and maintaining the operational pace of maneuver units. Due to the similarity of equipment in the CLC and Support Platoon (the HEMMT and PLS vehicles share the same basic

chassis, and therefore have the same mobility) there is no change in the mobility of the CSS units.

The signature effects of CSS units also impact on the maneuver battalion. While the Combat Power Model defines the signature effects of the maneuver unit as the signature of the weapons systems assigned to it and their impact on how a unit is employed, the physical signature of the logistics vehicles and operations also impact the employment of the maneuver unit. This effect is particularly evident during ammunition and fuel resupply missions when the distinctive signature of the logistics assets forces the combat unit to take precautions to ensure the employment of the unit is not compromised. Close coordination between combat and logistical personnel is critical to minimizing the impact of the logistical signature. Since the physical signature of the CLC and Support Platoon equipment will not significantly change, the key question that must be addressed is whether the removal of the CSS assets to logistics rather than maneuver battalion control will negatively effect the coordination efforts and result in an increased signature effect for the maneuver task force.

The last function effecting the flexibility of employment of the maneuver battalion is the tactical employment doctrine of the logistics units and the impact of this doctrine on that of the maneuver battalion. The Support Platoon and Headquarters Company of the maneuver battalion are currently commanded by combat arms officers. As such, there is a common language, understanding, and level of training that exists between them and the platoon leaders and staff officers of the maneuver battalion which enhances the potential of the organization. While it can be argued that there is a commonality among all Army officers, it does not approach the commonality inherent between the combat arms officers.

The same argument could be made for commonality among any branch or specialty of officers in the Army. If one accepts the value of this commonality, then it is important to analyze the effects on the maneuver battalion when this commonality is reduced. The flexibility and combat power of the maneuver battalion are greatly enhanced through common usage of terminology, understanding and training.

2. Impacts on Maneuver Effect

Maneuver is the second effect addressed by the Combat Power Model. The model defines effective tactical maneuver as "...the ability to engage the enemy or avoid engagement in such a way as to maximize the effects of friendly firepower and minimize the effects of enemy firepower--in effect skew the firepower balance in ones favor."²⁷ Maneuver effects are a function of four factors; unit mobility, tactical analysis, management of resources, and command, control, and communications. These factors, along with ammunition resupply, form the core of what organizational level logistics does in support of the maneuver battalion. Maintaining the health of the soldiers, the serviceability of the equipment, and providing the food, fuel, and other supplies needed, are critical to allowing the maneuver battalion to achieve the full potential of maneuver effects.

A. Impacts on Unit Mobility

The first factor effecting maneuver is unit mobility. The Combat Power Model defines unit mobility as a function of five factors; the physical fitness and health of individuals, unit teamwork and esprit, unit equipment capabilities, unit equipment maintenance, and unit mobility skills. Unit equipment capabilities are a factor of the

equipment's mechanical properties as modified by quantity, terrain, and weather. Since organizational logistics does not influence these capabilities, it will not be addressed in this analysis. On the other hand, the maneuver battalion is directly impacted by the performance of organizational logistics units in each of the other cases, requiring that we look at each in turn.

While the physical fitness of the soldiers in the maneuver battalion is primarily the responsibility of the chain of command, the health of the soldiers is the combined responsibility of the individual, the chain of command, and the doctors and medics supporting the battalion. The concerns of the Medical Center and School have already been discussed as has CASCOM's response. While there is no need to restate these positions here, it is important to emphasize that the effectiveness of the medical support received from the medical platoon of the CLC must be at least as effective as that received from the support platoon to ensure the health of the soldiers and hence maximize the mobility of the maneuver battalion. One key impact of the new logistics concepts on the doctor and medics assigned to the CLC is that they will now be required to have a dual focus to their medical functions. They are responsible for the support of two distinct units, the maneuver battalion and the CLC, and must answer to two commanders. While this is not an insurmountable problem, it is important that any analysis take its effect on the maneuver battalions medical support into account.

The second factor effecting unit mobility is unit teamwork and esprit. These factors are undoubtedly difficult to define and measure, yet few would argue that their effects on a unit are considerable. S. L. A. Marshall believed that effective teamwork and esprit are crucial to battlefield success. There is an "...inherent unwillingness of the soldier to risk

danger on behalf of men with whom he has no social identity.”²⁸ In this analysis we must look at the teamwork and esprit of the maneuver battalion and the logistics units separately, and how their effects impact the other unit. The concerns voiced by the Medical Center and School could also be raised by the maintenance and supply communities. A close working relationship between supporting and supported units provides a major impetus to the creation and maintenance of teamwork and esprit. With the change in command relationships and working dynamics between the combat and combat service support soldiers and officers, it will be much more difficult to build the collective teamwork and esprit of the total team.

The third factor influencing unit mobility is equipment maintenance. Readiness rates are a key concern of the maneuver battalion commander. By taking the organizational maintenance assets away from the maneuver battalion commander, we have created a situation where responsibility for organizational maintenance is split between the maneuver battalion commander and the CLC commander. The maneuver battalion commander and his staff no longer have direct control over the conduct and scheduling of services, or the utilization, transfer or budgeting for repair parts. The support battalion commander can now direct the cross-leveling of CL IX assets within all brigade units. While this gives increased flexibility to the CSS commander, it provides less control to the maneuver battalion commander. The quality of organizational maintenance in a unit is directly effected by the level of influence and participation of the unit commander in his maintenance program. The expertise and level of effort from both the soldiers operating the equipment, the mechanics who repair the equipment, and the leaders ensuring the efficient utilization of maintenance resources, is also of great import to effective

maintenance. What is often overlooked in maintenance operations is the synergistic effects created by the relationships between these parties. Integration and cooperation between the above mentioned personnel creates a dynamic that enhances the operations of the overall effort. Experience has demonstrated that as organizations are consolidated along functional lines, it is more difficult to build these types of relationships. As such it is important that we carefully analyze the effects of organizational maintenance consolidation at the CLC and its eventual impact on unit mobility.

The last factor that effects unit mobility is the state of a unit's movement skills. The Combat Power Model defines tactical unit mobility as "...a measure of a unit's ability to properly move from point A to point B. This is mostly a function of training and unit SOPs. These skills...include road marching, occupying assembly areas, map reading, foot mobility, air mobility, and many other related skills."²⁹ While an individual unit's movement skills are important, the ability to integrate and coordinate unit movements becomes even more important when separate units are involved. The same close relationships between leaders that are critical to effective maintenance operations are equally important to unit mobility. There is no doubt that any organizational level logistics unit can learn effective and efficient unit mobility skills. However, the critical and more difficult task is learning to integrate those skills into the operations of the supported battalion. These integration skills require intense coordination and extensive training to perform at a level commensurate with the requirements of the modern battlefield. The unit mobility skills of the supporting logistics unit can have a positive or negative impact on the overall mobility of the maneuver battalion and should be taken into account in any analysis of CSS units.

B. Impacts on Tactical Analysis

The second factor effecting maneuver is tactical analysis. "In order to be effective, a unit must not only be able to displace rapidly, but must also move to the right location prepared for the correct action. This is dependent upon proper analysis by unit staffs and leaders or the ability to "read" the battlefield."³⁰ The model identifies three functions necessary to accomplish this "read" of the battlefield; intelligence and knowledge of enemy tactics, understanding of terrain effects, and understanding of own unit capabilities. Although the logistician is dependent on the maneuver battalion for his knowledge of the enemy, this knowledge is nonetheless critical to CSS operations. An understanding of terrain effects and the capabilities of both the logistical unit and the unit it is supporting is as critical to the logistician as to the combat arms soldier.

Logisticians operating within a battalion zone of operations must be constantly aware of the enemy situation. Decisions made about the employment of CSS assets forward into the battalion's zone, the delivery of munitions and fuel, and the evacuation and treatment of wounded should be made in relation to the enemy situation. In this forward area of the battlefield CSS units are only marginally capable of defending themselves. Logistics units must be made aware of such things as minefields that have been bypassed or breached, chemical hazards, bypassed enemy units, and many other situations that are infinitely more hazardous to soft skinned vehicles than they are to combat equipment. If enemy activity is likely, the logistics assets require protection by combat units in order to ensure mission accomplishment. The Intelligence Preparation of the Battlefield (IPB) process is as critical to CSS operations as it is to combat operations. These same lessons hold true when it comes to having an understanding of the friendly situation. Due to the fluid nature of the

tactical battlefield, close coordination and timely, accurate information are needed to enable CSS units to accomplish their missions. This information, like that relating to the enemy, must primarily come from the supported maneuver battalion. The conclusion drawn from these facts is that a requirement exists for the accurate and timely flow of information between the maneuver battalion and its organizational logistics support. The ancillary to this is the requirement for sufficient communications equipment to enable this exchange of information. As a result of the consolidation of the logistics assets into the CLC these requirements will necessitate that a greater effort be made to accomplish the coordination and communication between the CLC and the maneuver battalion.

The second part of tactical analysis is an understanding of terrain effects. "Terrain appreciation by commanders is strictly a function of exposure to it either in the military school system or with units, but is best achieved by a heavy dosage of both."³¹ This understanding is just as important to logisticians as it is to combat arms officers and NCOs. The organizational logistics unit must understand and utilize the benefits of terrain while avoiding the hazards. If CSS units are deficient in these skills they will be less effective in providing logistics support to maneuver battalions. While impressive gains have been made in the off-road mobility of tactical logistics vehicles, they still do not match that of their combat arms brethren. Proper positioning of logistics support areas and a full knowledge of the terrain and its impact on support operations will go far towards ensuring adequate logistical support is given to the maneuver battalion.

The last function of tactical analysis to be looked at is the soldier's understanding of the tactics and capabilities of friendly units. Knowledge of the tactics and capabilities of friendly units, like that of terrain appreciation, is a result of military schooling and

operational experience. The difference is that, unlike terrain appreciation, the tactics and capabilities of each unit differ based on numerous factors. Unit commanders, training levels, equipment types, and assigned geographical orientations all can alter the tactics a unit employs and its inherent capabilities. What this implies for the logistician is that the support given to any particular unit will be unique. A commander that is comfortable with executing a night attack with his battalion would require that his organizational logistics support be proficient in night movement, and be capable of performing its resupply missions during the hours of darkness. It is therefore imperative that a maneuver battalion's organizational logistics unit train with, and habitually support the same maneuver battalion. The proposed concepts of CLC employment take this necessity into account. There should be no discernible difference between the knowledge of the CLC and the current support platoon given that the same amount of time is available for training.

C. Impacts on Management of Resources

Management of resources is the third maneuver effect analyzed by the Combat Power Model. The model defines management of resources as the "...efficient ... management..." of the "...equipment, supplies, personnel, time, and the energies of his subordinates. He must manage these resources so that the most important tasks are addressed first, and so that he maintains a reserve for the unexpected."³² The Combat Power Model recognizes four subordinate functions to resource management; equipment utilization, supply utilization, personnel utilization, time utilization, and the utilization of the energies of subordinates. The efficient utilization of resources was one of the single most important factors driving CASCOM's revamping of organizational logistics doctrine

and structures.³³ Consolidation and centralization of logistics resource management, combined with the recent advances in communications technology, offered a way to reduce costs and force structure in a time of declining budgets. It is obvious that these functions of resource management are important to the functioning of any military unit, and as such must be included in our analysis.

The first element of resource management to be covered is equipment utilization. The first question that must be answered is how the organizational logistics unit effects the combat equipment utilization of the maneuver battalion. The obvious answer is that the combat equipment utilization of the maneuver battalion is not effected by the performance of organizational logistics units, but rather by the policies and direction of the maneuver unit's leadership. However, we must also look at the utilization of the logistics assets that support the maneuver battalion. This is where the consolidation of logistics equipment has the potential to demonstrate greater utilization and hence allow fewer pieces of equipment to perform the same mission. In the case of the CLC this potential has yet to be realized. The maneuver battalion CLC currently retains a nearly identical mix of vehicles as the support platoon of the current maneuver battalion.³⁴ Any current reductions in equipment are due to technological improvements in the equipment's capability rather than consolidation of assets.³⁵ Since testing is currently ongoing, it remains to be seen if consolidation of equipment will result in increased utilization and a reduction in equipment requirements. It would also be valuable to analyze the effects of consolidation at levels higher than the CLC to determine if these savings are realized at a higher level of logistics.

The second element of resource management is supply utilization. There are two distinct forms of supply utilization. The first, and the one most applicable to all military

units, is the consumption of supplies. All leaders are responsible to ensure that supplies are not wasted, and when consumed, are used efficiently. Because a logistics units consumption of supplies has little, if any, impact on the units they support, this level of supply utilization has less weight in our analysis. The second form of supply utilization is the storing or stockage of supplies. While every military unit stores some level of supplies, by virtue of the quantities involved, logistics units have the greatest impact on utilization efficiency. Organizational logistics units must ensure that the correct quantities and types of supplies are on hand. CASCOM believes that reductions in quantities of supplies carried, especially Class IX repair parts, can be achieved through the consolidation of logistics capability in the CLC and centralization of supply management. Along with the advances in communication and data management technology, efficiencies can be gained through better management. However, it is important to remember that some level of redundancy is necessary during combat operations. Just-in-Time principles work well on an assembly line, but have limited utility on the battlefield where Clausewitz's "fog of war" still influences every operation.

The third element of resource management is personnel utilization. Soldiers are the most important resource the Army possesses. The Combat Power Model identifies two areas that a commander must consider when determining how to best utilize his personnel resources; the "...energies of his subordinates." and "...the ability to focus the efforts of all members of a unit on priority tasks."³⁶ Consolidation of resources at the CLC should give its commander the ability to better utilize both his subordinates energies and to weight the maneuver battalion's main effort. Although the personnel resources assigned to the CLC

have not been finalized, this facet of resource management is where the Army stands to gain the greatest efficiencies through the consolidation of logistics resources.

Time utilization is the fourth element of resource management identified by the Combat Power Model. The ability of a logistics leader or manager to efficiently utilize the time of his subordinates can greatly impact the quantity and quality of a units output of services and supplies. In turn, these outputs have both direct and indirect impacts on the combat potential of supported units. The issue that must be analyzed, in regards to the ability of the CLC to utilize the time of soldiers, is the impact of dual chains of command. It is understood that the maneuver battalion commander will make his priorities known to the CLC, however the CLC commander must then use those priorities to determine the best utilization of his personnel and equipment resources. While this sounds simple on paper, the dual command structure, combined with the complexity of the modern battlefield, requires an in-depth analysis of events and their effects on the maneuver battalion.

D. Impacts on Command, Control, and Communications

Command, control, communications, and intelligence (C3) is the last factor effecting maneuver identified in the Combat Power Model. It identifies three elements that effect C3; span of control, SOPs and doctrine, staff efficiency, and communications efficiency. All of these elements are applicable to logistics units and will be included in this analysis. The technological advances made in the C3 arena are critical to the success of CASCOT's logistics proposal. It is therefore necessary to evaluate the stated capabilities of these technologies against their actual performance to ensure that the CLC is still capable of functioning as envisioned. It should also be remembered that the decision to

not purchase a technology, for whatever reason, can have the same effect on a unit's performance as a technology failure.

Span of control is the first C3 effect identified by the Combat Power Model. Span of control can have a positive or negative effect on a military unit. While consolidating control under one individual can give focus and continuity to a unit it can also make the unit unmanageable. The size and complexity of modern warfare has dictated a reduction in that span of control over the last 150 years. The desire to reduce the span of control of the maneuver battalion commander and his staff has already been identified as one of the guiding principles which drove the consolidation of logistics assets in the CLC. The size of some CLCs developed for the Mobile Strike Force during Prairie Warrior 95' exceeded 400 soldiers. It would be difficult for any commander to control this size of organization using a company headquarters staff. While there may be merit in reducing the span of control for the maneuver battalion commander, the logistics support unit for that maneuver battalion must also have a manageable number of soldiers, equipment, and missions to control.

Doctrine and unit SOPs are the second element effecting C3. "Control is facilitated by sound doctrine and unit SOPs since they facilitate communications about, and coordination of, desired actions."³⁷ Any military unit is capable of developing effective SOPs and following doctrine. The CLC is no exception to this statement. However, by assigning the CLC to a FLB, the CLC is now required to ensure that all SOPs are compatible with the guidance of two commanders rather than one. This is definitely not an insurmountable problem, but it does add a level of complexity to the development of logical, usable SOPs. The same comments can be made concerning doctrine. Every unit

incorporates doctrine in a slightly different way. All of these factors must be taken into account to ensure that the CLC is capable of fulfilling its organizational logistics mission.

The third C3 effect identified is staff efficiency. "Staff organizations must be designed to facilitate the decision process and not retard it."³⁸ Since the CLC does not currently possess a staff of its own, the relationship between the CLC and the maneuver battalion and FLB staffs must be analyzed. The FLB staff will facilitate the control and management of the CLC and its resources. Both the FLB staff and the CLC will receive priorities and guidance from the maneuver battalion staff. Also, they will both directly coordinate with the maneuver battalion staff. This situation increases both the amount of vertical and lateral communication and coordination required, and as such will add to the overall complexity of unit relationships. These staff relationships and responsibilities require intense scrutiny to ensure that they facilitate the decision process instead of degrading it.

Communications efficiency is the last factor that the Combat Power Model identifies as an element of C3. "Adequate communications to facilitate a rapid flow of information and directions is a requisite for effective command and control."³⁹ Communications, in both quantity and quality, have seldom met the requirements of the logistics community. This is true at all levels to include the current maneuver battalion support platoon. CASCOM's initiatives rely heavily on communications technologies that are not available today. While one can argue that the technological potential exists to meet these needs, the analysis must take into account the possibility that these technologies will either fail to meet design specifications or not be fielded due to insufficient funding. Either of these

conditions have the potential to seriously degrade the capabilities of the proposed logistics units.

3. Impacts on Protection Effect

The third major function of combat power identified is protection. The Combat Power Model defines protection as the amalgamation of three effects; concealment, exposure limitation, and damage limitation. Organizational logistics units primarily impact the protection of maneuver battalions through their ability to conceal themselves from enemy observation, treat casualties, repair equipment, and replace material and personnel losses.

A. Impacts on Concealment and Exposure Limitation

The Combat Power Model identifies four effects that influence concealment; camouflage, stealth, equipment design, and the ability to counter enemy intelligence acquisition means. It also defines exposure limitation as the effects of three factors; minimizing potential target size, minimizing potential target exposure time, and complicating potential target tracking. Due to the similarity of the effects created by logistics units, these two categories can be analyzed together. Logistics units are difficult to conceal on the battlefield. Their noise, heat, and electronic signatures⁴⁰ along with their size and the constant flow of air and ground traffic through their operating areas, provide good sources for enemy intelligence collection assets. The sheer size of logistics units and the supplies they receive, store, and issue make effective camouflage nearly impossible. The continuous flow of supplies required by modern mechanized units also makes stealth a difficult proposition. The end result is that CSS units have the potential to influence the

maneuver units concealment through their inability to conceal themselves. Since there is a relationship between size or dispersion and the ability to conceal a unit or activity, it stands to reason that an analysis must be made between the tradeoffs, the desire to consolidate, and the need for dispersion. The relatively minor differences in equipment density between the current support platoon and the CLC create no discernible differences between these units.

B. Impacts on Damage Limitation

Logistics units heavily impact the last element of protection effects. The Combat Power Model defines damage limitation as consisting of nine effects; individual protective equipment design and use, use of natural cover, use of artificial cover, combat vehicle design, the medical treatment and evacuation system, combat equipment cannibalization and repair, alternate command and control arrangements, providing personnel and material replacements, and miscellaneous efforts to maintain continued combat effectiveness of units. It is true that providing personnel and material replacements is a logistics mission, however, this mission is primarily the responsibility of logisticians at the support battalion level and above. Organizational logistics units have little influence over equipment and personnel replacements. Logistics units directly impact only two of the nine effects, however, they form a critical component of its success.

The medical treatment and evacuation system is vital in limiting combat damage in maneuver units. At issue here is both the quantity of medical care available, and the quality of that care. A comparison of equipment and personnel would indicate that the quantity of medical care available to a maneuver battalion remains the same under CASCOT's proposed reorganization. The issue that has been raised is one of quality.

The U.S. Army Medical Department Center and School's position is that medical soldiers must be an integral element of the units they support in order to ensure the quality of medical care. CASCOM supported their position by stating that they believed quality medical care could be ensured by retaining the same support relationships and battlefield locations even though the chain of command was different. There is really only one question that must be answered. What impact will the change in organizational and command and control structures have on the medical treatment received by the maneuver battalion. The obvious conclusion is that medical support cannot be allowed to degrade at the organizational (Level 1) level of care. This must be the paramount consideration when discussing medical support.

Like the organizational level medical system is to personnel care, the organizational maintenance system is to combat equipment cannibalization and repair. Both the quality and quantity of maintenance support is critical to ensuring high readiness rates and the quick repair of damaged equipment in the supported maneuver battalion. Since organizational maintenance has been covered earlier in this paper, the points will not be repeated. Suffice it to say that both the quality and quantity of organizational level maintenance must meet the demands for damage limitation within the maneuver battalion.

4. Impacts on Leadership Effect

Leadership is the fourth major factor effecting a units potential combat power. The Combat Power Model identifies six qualities that combine to form the leader's effect on a unit's potential combat power. These six factors are technical proficiency, understanding of unit capabilities, analytical skills, communication skills, dedication, commitment, and

moral force, and the understanding of battlefield effects. Since the change in command structures is one of the key differences between the maneuver battalion support platoon and the CLC, leadership effects deserve close attention in this analysis. The only factor this paper will not cover is dedication, commitment, and moral force. None of these qualities is the sole possession of any branch or specialty, but an expression of individual efforts and abilities. As such they are important, but do not differentiate.

A. Impacts on Technical Proficiency

The leaderships technical proficiency is a function of the leaders training and experience. As such, it appears that the CLC structure has traded reduced tactical proficiency for increased logistics technical proficiency. The maneuver battalion company commander and support platoon leader are generally both combat arms officers who should be expected to have a high level of tactical proficiency to include the command and control of organizational logistics operations. The CLC's commander and platoon leaders are CSS officers who should possess a higher level of logistically oriented technical skills than their combat arms brethren. However, at the organizational level this is not always the case. Combat arms officers generally receive as much or more training and experience in organizational logistics as CSS officers. The emphasis placed on organizational logistics, especially maintenance, by maneuver battalion commanders greatly assists the education of combat arms officers. What is most important to maximizing an officer's proficiency at the battalion level and below is field experience. Combat arms officers are generally well endowed with field experience. Theoretically then, there should be no inherent difference between combat arms and CSS officers, serving at this level, except the individual amount of training and experience that they possess.

B. Impacts on Understanding of Unit Capabilities

CSS officers are at a distinct disadvantage in understanding the capabilities of the combat unit they are supporting when compared to the combat arms officers in that unit. While this skill can be learned through observation and support operations, there is a difference between this and the actual conduct of combat operations. The assignment of CSS officers to initial tours of duty in combat arms branches goes a long way towards redressing this balance. However, in order to provide effective leadership, we must still ensure that the officers serving in CLCs truly understand the capabilities of the units they are supporting. Any analysis must compare the differences in understanding developed in officers of differing branches, and how that understanding impacts their abilities to lead CSS soldiers.

C/D/E. Impacts on Analytical and Communication Skills, and Understanding of Battlefield Effects.

Communications skills, analytical skills, and an understanding of battlefield effects are the next elements of leadership effects identified by the Combat Power Model. S. L. A. Marshall was well aware of the importance of these skills in future warfare. "With the growth of experience troops learn to apply the lessons of contact and communicating, and out of these things comes the tactical cohesion which enables a group of individuals to make the most of their united strength..."⁴¹ These skills are also a function of training and experience. While all officers theoretically speak the same language and operate under one doctrine--Army, in reality there can be vast differences between officers of different branches, and even within branches. There are two distinct approaches to ensuring effective analytical skills, communication skills, and understanding of battlefield effects for

those leaders assigned to organizational logistics slots. The combat arms branches generally place officers in these positions who have been platoon leaders and have proven themselves capable of leading soldiers at the platoon level. The other approach is to put officers into these positions to gain the requisite experience. No matter which approach is used, the key to success is a common base of knowledge that has been honed through education and a common shared experience. It will be difficult for logistics branched officers to gain the experience levels expected of combat arms officers. Currently, no system of organization exists, other than the previously mentioned re-branching of officers after initial tours of duty in the combat arms branches, that can provide logistics branched officers the skills and understanding needed for organizational level logistics positions. The logistics community must address these issues to ensure that CSS officers are prepared to lead organizational logistics units in this most demanding and complex environment.

VII. Conclusion

During 1994 and 1995 CASCOM developed and began testing a new concept of tactical logistics for the U.S. Army that was designed to "unencumber" maneuver units. This concept changed both force structure and doctrine. Three concepts served as the foundation for doctrinal and organizational change. The first concept was to centralize all logistical command and control in the maneuver brigade. The theory was that centralization of functions, control, and management would create efficiencies in both materials and personnel. Efficiencies can be gained in this fashion, and they are inherently good, but gains in efficiency must be balanced against their impact on the combat effectiveness of the supported battalion. The second concept was to make full use of advanced technology. Technological advances enabled many of the concepts developed, and in many cases formed the basis for change. The last concept was that any CSS force structure design must be able to sustain the tempo and pace of the units they are supporting.

CASCOM's efforts in the development and testing of the proposed logistics concepts have been focused in three areas. First, they have ensured that the theoretical capacity of the units to receive, store, and issue supplies, perform maintenance, and perform medical services is adequate based on currently accepted planning factors. Second, they have designed the units with the requisite capabilities in the supply, maintenance, and medical areas. Last, they attempted to gain efficiencies through the consolidation of functions, management, and resources. The approach taken by CASCOM has answered numerous questions and provides a sound technical basis for the development of this concept. It has

also generated considerable healthy discussion in the Army, especially in the logistics community. However, this approach does not go far enough.

Numerous questions remain unexplored. How will the new logistics concepts effect the teamwork between combat, combat support, and combat service support units so necessary to successful operations on the battlefield? How will it effect the ability of the leaders, both combat and combat service support, to maximize the potential of their units? Will the increased technological sophistication create savings in resources? This proposed organizational logistics concept further segregates, both emotionally and physically, the combat arms soldier from the soldiers that provide his logistical support. Although there is virtually no change to the position of CLC units on the battlefield, they are no longer as integral a part of the combat arms battalion team. The proposed withdrawal of the medical platoons from line units in combat arms battalions is an excellent example of this phenomenon. Medical platoons live, eat, and sleep with the soldiers they support. They develop an understanding and respect that significantly improves their ability to provide quality health care. Moving the medics and the battalion surgeon to the CLC has the potential to reduce their knowledge of the soldiers and their health status and reduce the trust and confidence they can build while working and living with the soldiers they support. To be effective medical soldiers must understand the tactics, techniques, and procedures used by the unit they support. This will be much more difficult to accomplish if the medical platoon is assigned to a CLC. These questions illustrate that CASCOM's analysis has not gone far enough. It has not addressed this proposed logistics restructuring in a holistic manner which takes into account the complex interactions inherent between and within all units involved. It has not assessed the impacts to the one

element critical to battlefield success; the impact of the logistics unit on the combat and combat support battalions ability to generate combat power.

A tailored methodology for guiding a holistic analysis of this proposed logistics restructuring is not available. However, an excellent analytical method does exist which provides a framework for "understanding combat power and the process of generating it to win battles."⁴² The Combat Power Model developed by Colonel Huba Wass de Czege in 1984 provides, although over ten years old, an effective analytical framework within which a methodology can be developed. This model, while oriented towards combat and combat support units, can easily be modified to meet the requirements of analyzing the impact that logistical units have on the combat power of maneuver units. By addressing only those effects where CSS units impact the potential combat power of the unit they support, and ensuring that each question is focused on relating the impact of the performance of the logistics unit to its effect on the combat power of the maneuver battalion, this model can provide an excellent analytical vehicle.

Due to the current budget levels it is even more important for the Army to perform a thorough, holistic assessment of the impacts CASCOM's proposed future logistics structure and doctrine will have on the combat and combat support units they provide for. An analysis using a modified version of the Combat Power Model will provide a thorough adjunct to the testing planned, and the analysis and testing already performed by CASCOM.

Appendix 1

The Combat Power Model⁴³

COMBAT POWER IS A FUNCTION OF:

1. FIREPOWER EFFECT: (which is a function of)

VOLUME OF FIRE: (which is a function of)

- Number of delivery means
- Supply capability
- Rate of fire of weapons systems

LETHALITY OF MUNITIONS:

- Design characteristics
- Explosive energy

ACCURACY OF FIRES:

- Weapon and munition design characteristics
- Crew proficiency
- Terrain effects
- Visibility

TARGET ACQUISITION:

- Intelligence and intelligence analysis
- Location and functioning of observers and sensors
- Transmission of target data

FLEXIBILITY OF EMPLOYMENT:

- Weapons ranges
- Mobility
- Signature effects
- Fire control systems
- Tactical employment doctrine

2. MANEUVER EFFECT:

UNIT MOBILITY:

- Physical fitness and health of individuals
- Unit teamwork and esprit
- Unit equipment capabilities
- Unit equipment maintenance
- Unit mobility skills

TACTICAL ANALYSIS:

- Intelligence and knowledge of enemy tactics
- Understanding of terrain effects
- Understanding of own unit capabilities

MANAGEMENT OF RESOURCES:

- Equipment utilization
- Supplies utilization
- Personnel utilization
- Time utilization
- Utilization of energies of subordinates

COMMAND, CONTROL, AND COMMUNICATIONS:

- Span of control
- SOP's and doctrine
- Staff efficiency
- Communications efficiency

3. PROTECTION EFFECT:

CONCEALMENT:

- Camouflage
- Stealth
- Equipment design
- Counter enemy intelligence acquisition means

EXPOSURE LIMITATION:

- Minimize potential target size
- Minimize potential target exposure time
- Complicate potential target tracking

DAMAGE LIMITATION:

- Individual protective equipment design and use
- Use of natural cover
- Use of artificial cover (include field fortifications)
- Combat vehicle design
- Medical treatment and evacuation system
- Combat equipment cannibalization and repair
- Alternate command and control arrangements
- Providing personnel and material replacements
- Misc. efforts to maintain continued combat effectiveness of units

4. LEADERSHIP EFFECT:

TECHNICAL PROFICIENCY:

- Training

Experience

UNDERSTANDING OF UNIT CAPABILITIES:

Training

Experience

ANALYTICAL SKILLS:

Selection

Training

Experience

COMMUNICATION SKILLS:

Selection

Training

DEDICATION, COMMITMENT, AND MORAL FORCE:

Selection

Motivation

Training

UNDERSTANDING OF BATTLEFIELD EFFECTS:

Combat experience

Training

Appendix 2

The Modified Combat Power Model

THE EFFECT OF LOGISTICS ON COMBAT POWER IS A FUNCTION OF:

1. **IMPACTS ON FIREPOWER EFFECT:** (which is a function of)
 - A. **IMPACTS ON VOLUME OF FIRE:** (which is a function of)
 - Number of delivery means
 - Supply capability
 - B. **IMPACTS ON FLEXIBILITY OF EMPLOYMENT:**
 - Mobility
 - Signature effects
 - Tactical employment doctrine
2. **IMPACTS ON MANEUVER EFFECT:**
 - A. **IMPACTS ON UNIT MOBILITY:**
 - Physical fitness and health of individuals
 - Unit teamwork and esprit
 - Unit equipment maintenance
 - Unit mobility skills
 - B. **IMPACTS ON TACTICAL ANALYSIS:**
 - Intelligence and knowledge of enemy tactics
 - Understanding of terrain effects
 - Understanding of own unit capabilities
 - C. **IMPACTS ON MANAGEMENT OF RESOURCES:**
 - Equipment utilization
 - Supplies utilization
 - Personnel utilization
 - Time utilization
 - Utilization of energies of subordinates
 - D. **IMPACTS ON COMMAND, CONTROL, AND COMMUNICATIONS:**
 - Span of control
 - SOP's and doctrine
 - Staff efficiency
 - Communications efficiency
3. **IMPACTS ON PROTECTION EFFECT:**

- A. IMPACTS ON CONCEALMENT AND EXPOSURE LIMITATION:
 - Camouflage
 - Stealth
 - Equipment design
 - Counter enemy intelligence acquisition means
 - Minimize potential target size
 - Minimize potential target exposure time
 - Complicate potential target tracking

- B. IMPACTS ON DAMAGE LIMITATION:
 - Medical treatment and evacuation system
 - Combat equipment cannibalization and repair

4. IMPACTS ON LEADERSHIP EFFECT:

- A. IMPACTS ON TECHNICAL PROFICIENCY:
 - Training
 - Experience

- B. IMPACTS ON UNDERSTANDING OF UNIT CAPABILITIES:
 - Training
 - Experience

- C. IMPACTS ON ANALYTICAL SKILLS:
 - Selection
 - Training
 - Experience

- D. IMPACTS ON COMMUNICATION SKILLS:
 - Selection
 - Training

- E. IMPACTS ON UNDERSTANDING OF BATTLEFIELD EFFECTS:
 - Combat experience
 - Training

Appendix 3

Glossary of Terms

BMO	Battalion Maintenance Officer
C3	Command, Control, and Communications
CASCOM	Combined Arms Support Command
CBS	Corps Battle Simulation
Class IX	Supply class for equipment repair parts
CLC	Combat Logistics Company
CSS	Combat Service Support
CSSTSS	Combat Service Support Tactical Simulation System (Logistics simulation software)
DISCOM	Division Support Command
DS	Direct Support
FLB	Forward Logistics Battalion
FSB	Forward Support Battalion
HEMMT	Heavy Expanded Mobility Medium Truck
HHC	Headquarters and Headquarters Company
IPB	Intelligence Preparation of the Battlefield
IRV	Improved Recovery Vehicle (Replacement for M88)
MSF	Mobile Strike Force
OPLOGPLN	Operational Logistics Planner (computer software used for logistics planning)
PLS	Palletized Load System
PMCS	Preventive Maintenance Checks and Services
S4	Primary logistics staff officer at battalion and brigade level
SOP	Standing Operating Procedure
TRADOC	Training and Doctrine Command

Endnotes

¹ TRADOC Pamphlet 525-5, Force XXI Operations: A Concept for the Evolution of Full-Dimensional Operations for the Strategic Army of the Early Twenty-First Century, (Ft. Monroe, Virginia: Department of the Army, Headquarters, United States Army Training and Doctrine Command, 1 August 1994), p. 1-1.

² Ibid., p. 4-1.

³ Ibid., p. 1-1.

⁴ Ibid., p. 1-5.

⁵ Martin L. Van Creveld, Supplying War (Cambridge: Cambridge University Press, 1977), p. 1.

⁶ Field Manual 100-5, Operations, (Washington: Headquarters, Department of the Army, January 1993), p. 12-1.

⁷ Forward Support Battalion (FSB) Supportability Test TMD 23 (U), (Ft. Hood: U.S. Army Training and Doctrine Command Combined Arms Test Activity, January 1984), pp. 1-4.

⁸ A good example of these procedures is the Army's supportability test of the Forward Support Battalion at Yakima Range, Ft. Lewis in September, 1983. While the test did cover some subjective criteria relating to C3 issues, it primarily concentrated on a statistical analysis of unit capabilities to deliver supplies, perform maintenance, and provide health support to a maneuver brigade.

⁹ Williams, Michael S. "Force XXI CSS Concept Design for Experimentation." Memorandum to Battle Lab and Branch School Combat Development Directors from Deputy Director, CSS Battle Lab, (Ft. Lee: CSS Battle Lab, Undated). p. 1.

¹⁰ Future Logistics Vision Briefing. CSS Battle Lab, Ft. Lee, VA. Not Dated. p. 3.

¹¹ Ibid.

¹² Ibid.

¹³ Williams. p. 3.

¹⁴ FM 525-5, p. 4-5.

¹⁵ Noble, John L. Mobile Strike Force (MSF) 95 Combat Service Support (CSS) Analysis Emerging Results Briefing, (Ft. Lee: U.S. Army Training and Doctrine Command Analysis Center, June 1995)

¹⁶ Ibid.

¹⁷ Williams. p. 2.

¹⁸ Guddy, John J. "Medical Platoons in Line Units." Memorandum to Commander, CASCOM from Commander, U.S. Army Medical Department Center and School, (Ft. Sam Houston, Undated). p. 1.

¹⁹ MG Guddy gave three reasons for not supporting this initiative. The first reason given is that the contact between the Battalion Surgeon and his medics is critical to ensuring adequate medical support to the maneuver battalion. This contact "...serves to establish not only a baseline knowledge of the soldiers and their health status, but to engender trust and confidence by the soldiers in their first-line medical support. The second reason for nonconcurrence is that medical soldiers go into combat with the soldiers of the maneuver units they support. Unlike other CSS soldiers, they spend every moment with the soldiers they support. The last reason is that, "Key and essential to this level of medical support is the medic's ability to perform to the same standard as his combat colleagues in the same harsh environment, intuitively respond to the same commands, and intimately understand the tactics, techniques, and procedures of the particular unit which he serves.

²⁰ Robison, Thomas W. "TF XXI CSS Experimental Concept." Memorandum to Commander, U.S. Army Medical Department Center and School, from Commander, U.S. Army Combined Arms Support Command, Fort Lee, Virginia, July 18, 1995.

²¹ Proposed Logistics Concept for Mounted Brigade and Below: Initial Impressions, (Ft. Knox: U.S. Army Armor Center and School, 24 July 1995). pp. 5-7.

The Armor Center's questions, issues, and implications can be broken down into four categories: relationships, organization, employment, and capability.

The first two questions address the changing relationships, roles, and functions of key personnel in the maneuver battalion and CLC. How do these new structures change the roles and responsibilities of the

maneuver battalion HHC commander? While this question is of some importance to the HHC commander in identifying his responsibilities, the second question asked by the school addresses the difficult issues. What will be the relationship between the maneuver battalion S4 and the CLC company commander? Ideally, this relationship will be similar to the relationship between the current brigade S4 and the FSB battalion commander and staff. The unknown is whether this relationship will work as effectively at the battalion level as it does at the brigade.

The second category of questions deals with the structure and organization of both the CLC and the maneuver battalion. With all organizational logistics support being consolidated in the CLC, will the maneuver battalion still have a requirement for an S1 and S4? Will maneuver battalions still have a battalion maintenance officer (BMO)? Will these functions be made a responsibility of the CLC? Changes to one organization make it necessary to analyze the impact on the organizations it interacts with. It is understood that the functions that individuals or organizations now do, must still be carried out under the new organizations. The issue is determining where and how to accomplish those functions.

The third category of issues relates to the employment concepts of the maneuver battalion and CLC. Currently the maneuver battalion operates in the field with a combat trains, field trains, unit maintenance collection point, and battalion aid station. The personnel and equipment to operate these activities come from the maneuver battalion HHC, and the HHC commander is responsible for coordinating the actions of all activities. Will this same concept work when units are organized under the proposed new logistics structure of the CLC? Will the fact that the CLC commander is responsible for coordinating and reporting to two commanders disrupt or dislocate the efforts to coordinate organizational logistics support for the maneuver battalion?

The final issues raised by the Armor Center and School fall under the category of capability. The CSS units that are currently assigned to the maneuver battalion HHC perform many tasks other than the standard arming, fixing, moving, manning, fueling, and medical functions. These tasks include such field responsibilities as security and reconnaissance, and garrison duties like motor pool security, deployment cycle support duties, and post support duties. Will the CLC be able to perform these tasks, and if they can, will they be able to maintain the same level of efficiency as a unit that is an integral part of the maneuver battalion? The final question raised by the Armor Center is the most important. Does this proposed logistics concept support the scheme of maneuver of the maneuver battalion and maximize its theoretical combat potential? The answer to this question must include the answers to all of the issues raised so far. It recognizes the fact that the true implications of any new concept or organization are only important in so far as they effect the bottom line combat potential of a military unit.

²² Clausewitz, Karl von. On War. Ed. Michael Howard, Peter Paret. New York: Alfred A. Knopf, Inc., 1993, p.139.

²³ Wass de Czege, Huba. "Understanding and Developing Combat Power." U.S. Army Command and General Staff College, 10 February 1984. p. 4.

²⁴ Ibid., p. 7.

²⁵ Ibid., p. 9.

²⁶ Ibid., p. 7.

²⁷ Ibid., p. 18.

²⁸ S. L. A. Marshall, Men Against Fire: The Problem of Battle Command in Future War (Massachusetts: Peter Smith, 1978), p. 153.

²⁹ Ibid., p. 19.

³⁰ Ibid.

³¹ Ibid., p. 20.

³² Ibid.

³³ Future Logistics Vision Briefing. p. 3.

³⁴ Williams, Michael S. "Combat Service Support Structure for Experimental Force (EXFOR)." Memorandum for Commander, Division Support Command, 2d Armored Division, Ft. Hood, Texas, (Ft. Lee: CSS Battle Lab, 29 June 1995). pp. 1-12.

³⁵ A good example of this is the substitution of the Palletized Load System (PLS) for the current HEMMT Cargo truck to transport ammunition. The PLS is a cousin of the HEMMT family of vehicles that

substitutes a flat cargo bed, which can be dropped and picked up off the ground, for the fixed cargo bed of the HEMMT. This provides a marked increase in ammunition carrying capability.

³⁶ Wass de Czege. p. 20.

³⁷ Ibid. p. 21.

³⁸ Ibid.

³⁹ Ibid.

⁴⁰ This will be an increasing problem for logistics units as larger bandwidths are consumed through the transmission of logistical data over the airwaves.

⁴¹ Marshall, p. 124.

⁴² Wass de Czege. Abstract.

⁴³ Ibid., pp. 12-13.

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